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## PATENT

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The *Bulletin Officiel de la Propriété Industrielle*. July 24, 1970 (# 30).  
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- 54 **New system for marking surfaces and more specifically roads and sidewalks surfaces.**
- 72 Invention: Lemoine.
- 71 Registrant : Public company known as NORD TECHNIQUE EXTRUSION, resident of France (Nord).

Agent: Michel Nony, 1, rue de Stockholm, Paris (8<sup>e</sup>).

30 Convention priority:

32 33 31 Patent for which the deliverance has been adjourned in accordance with Section 11, s 7, of the Law of July 5<sup>th</sup>, 1844, amended by the Law of April 7<sup>th</sup>, 1902.

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PARIS (15<sup>e</sup>)

The present invention concerns a new system for marking surfaces, and more specifically roads and sidewalks surfaces.

It is well known that roads and some sections of sidewalks have to be marked with yellow or white lines.

Up to now, such markings are made either by directly applying paints or gluing sheets, for instance plastic sheets, on these surfaces at predefined locations.

These types of markings are not entirely satisfactory because their application is relatively difficult and their resistance to wear often inadequate.

The present invention concerns a system that eliminates these disadvantages.

The present invention concerns the new industrial product consisting of a surface marking system that can be used for roads and sidewalks. This system is essentially characterized by the fact that it produces an extruded plastic net comprising at least two mats of parallel threads that are set one against each other, at least one of the mats being embedded in the material used for the surface, so that the other mat remains visible and materializes the marking, while the net is securely anchored onto the surface.

The present invention has been designed for marking surfaces such as roads or sidewalks, the process used being essentially characterized by the fact that an extruded stripe made of at least two mats of parallel threads is laid on the sections of the surface to be marked before settling of this surface, that the two mats are kept facing each other, that at least the lower mat is sunk into the material of the surface, and that the surface may latter be made to settle.

Lastly, the present invention concerns the new industrial system which produces an extruded plastic stripe used for marking surfaces as described above, this stripe being essentially characterized by the fact that the mat of threads on its upper side is preferably large compared to the spacing between any two threads parallel to this mat.

In a particular mode of production of the stripe with this invention, the two mats of threads which constitutes the net are at an angle notably less than  $90^\circ$ , for instance about  $60^\circ$ , so as to accommodate for the deformations resulting from dilatations and shrinkages induced by temperature variations.

According to this invention, the plastic used for the production of the stripe is chosen for its resistance against the bituminous products used for paving roads and sidewalks.

According to this invention, the plastic of the stripe may contain charges or color pigments as well as other products such as fluorescent or phosphorescent materials that can improve the visibility of the marking at night.

The invention allows for the marking of road surfaces through simple application of a net stripe on the areas to be marked, preferably immediately after the bituminous layer has been laid down. The laying and setting of the net on the surface is done by simple compacting with, for instance, a road roller, that sinks the net into the surface.

In order to better convey what the invention entails, we are now going to describe, for illustration purposes and without implying thereby any limitation, a particular operational mode taken as an example and illustrated on the appended drawing.

On this drawing:

Figure 1 is a perspective view of a net used to operate the invention.

Figure 2 is a cross-section view of a road surface marked with the invention.

Figure 3 is a schematic view showing how to use the process according to the invention.

Figure 4 is a schematic perspective view of a road equipped with the marking system described by this invention.

Figure 1 shows a the particular mode of production of an extruded plastic net for marking according to the invention.

Such a net can, for instance, be obtained directly by extrusion from two dies rotating concentrically, the surface between the two dies featuring notches on each die of the same width than the mats of extruded threads. These notches are properly located on the two dies to produce the knots.

In the present description, the word "net" is used without implying the strict meaning generally associated with it. As a matter of fact, the invention can use any net consisting of an open-work plastic structure made of two layers of threads joined where the threads cross, the two layers being on either side of a common plan.

According to the invention, the net in Figure 1 is made of an upper layer of threads (1) with larger width, e.g. about 10 mm, and smaller thickness, e.g. about 3-4 mm. As shown in Figure 1, spacing between two threads (1) is less than the width of each thread (1). In the production mode illustrated here, the spacing is about half the width of threads (1).

The layer of threads (1) is the visible part of the marking done with the invention. Threads (1) are best laid parallel to the line to be marked on the pavement.

The lower layer is made of threads (2) that have a smaller section and are arranged at an angle relative to threads (1).

In this example, threads (2) have a square section but they could also have a trapezoid section with the small side in contact with the threads (1) layer.

To perform marking with the net shown in Figure 1, bands of net of the same dimensions as the marking to be realized would have to be cut. In the operational mode illustrated in Figure 1, the length of the band is parallel to threads (1).

Figure 2 shows the marking system being applied on the pavement of a road. Also shown is the road base (3), possibly made of concrete paved with a layer of bituminous bonding agent (4) that embeds the lower part of the net. One can clearly see on Figure 2 how the layer of threads (2) is totally embedded into the bituminous bonding agent which also fills the spaces (5) between the upper layer threads (1). In the operational mode shown here, the bituminous bonding agent lays slightly below the upper surface of layers (1) but it could of course come flush with this surface.

To apply the process according to the invention, a layer of bituminous bonding agent (4) is applied on the road as a paste by a known machine (6), as shown schematically on Figure 3. A band of net (7) is unrolled on the new pavement where marking is needed. The bituminous bonding agent and the net (7) are then

pressed together with, for instance, a road roller (8). During this operation, the net (7) is pressed into the bituminous bounding agent where it sinks before the bounding agent settles.

This application mode may be used with either hot bituminous bounding agents that settle when cooling down or cold bituminous bounding agents that settle without the need of any temperature change.

Figure 4 shows a schematic section of a road marked according to the invention, the band (7) being in the middle of the road.

It is understood that the operational mode described above does not limit the scope of the invention. It is possible to modify this operational mode as needed without falling out of the invention scope.

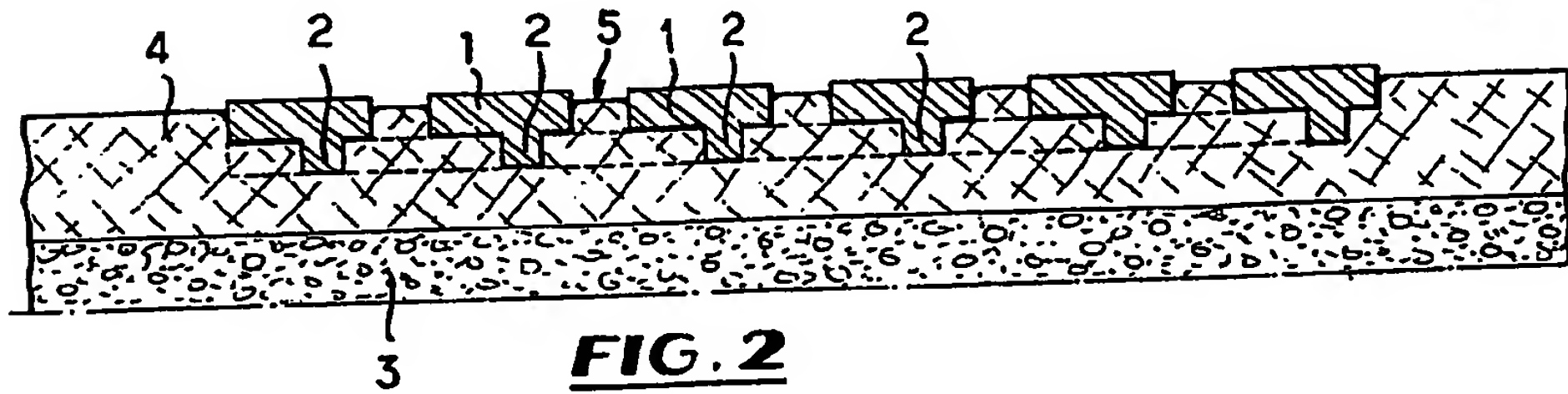
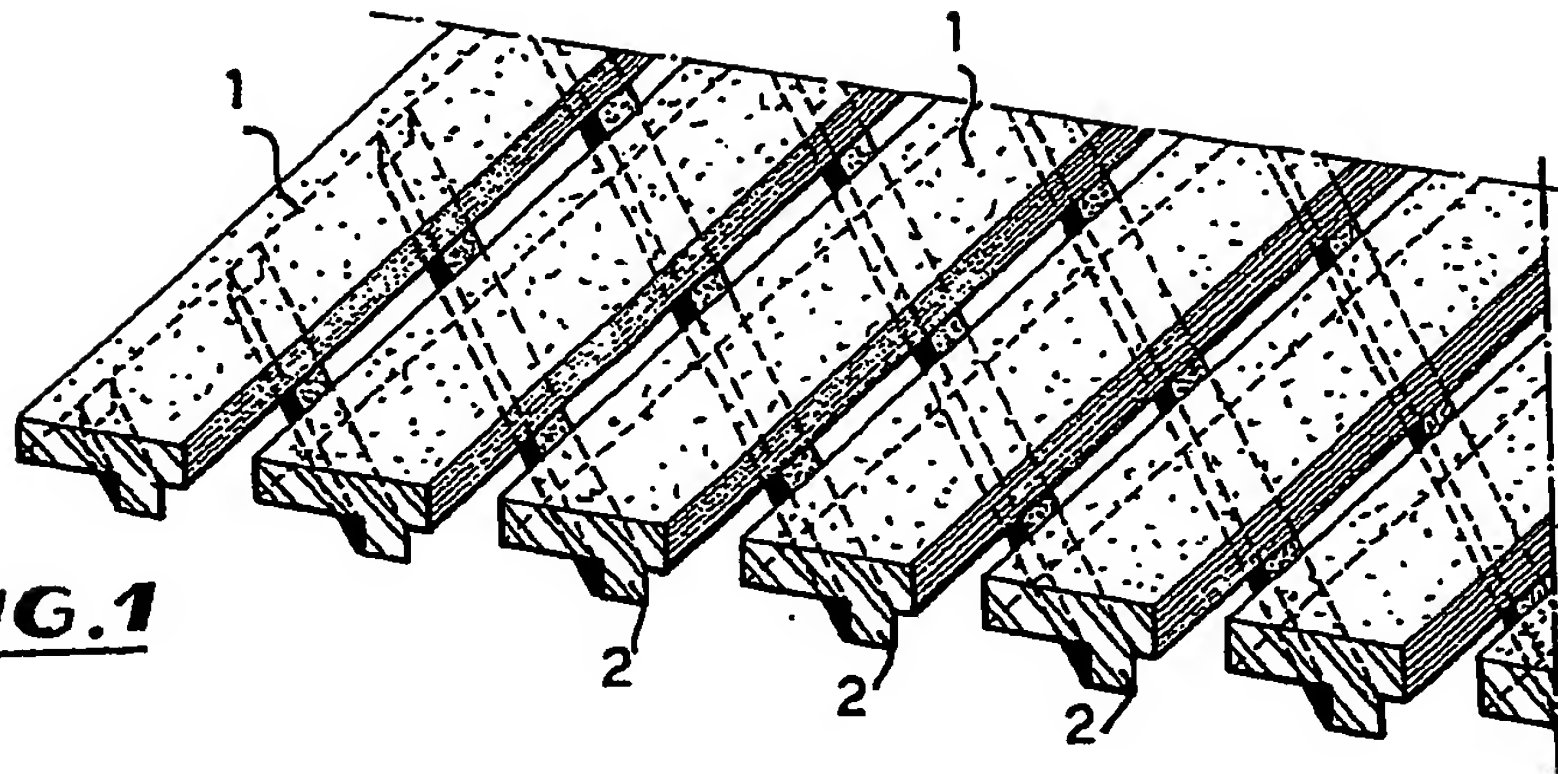
More specifically, it is clear that the invention is not limited to the marking of roads and that it could be used for marking any pavement and surface such as sidewalks, roofs or even walls.

Similarly, the invention needs not be limited to the case where bituminous bounding agents are used.

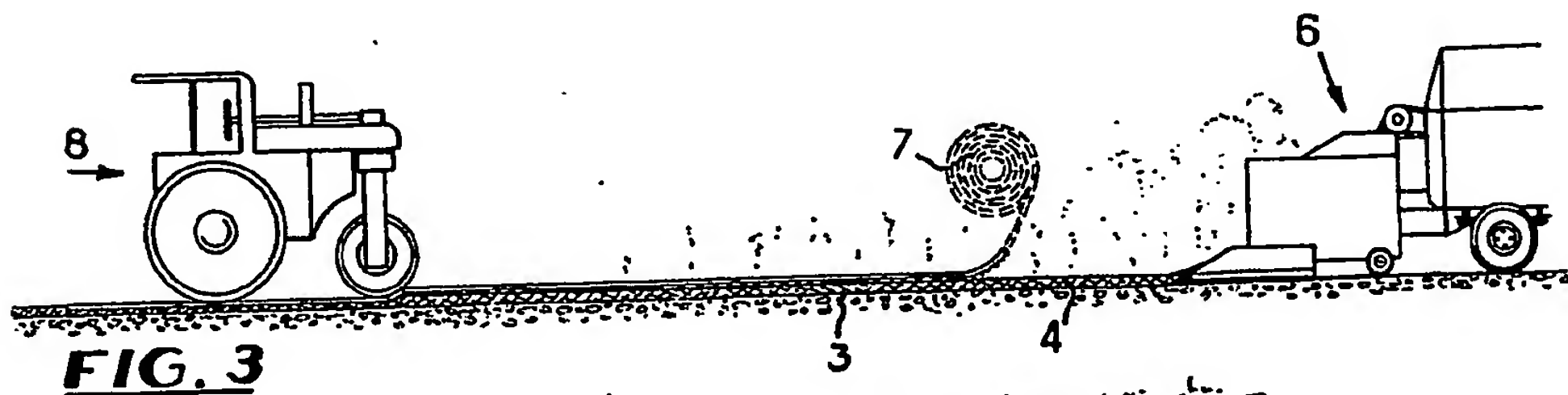
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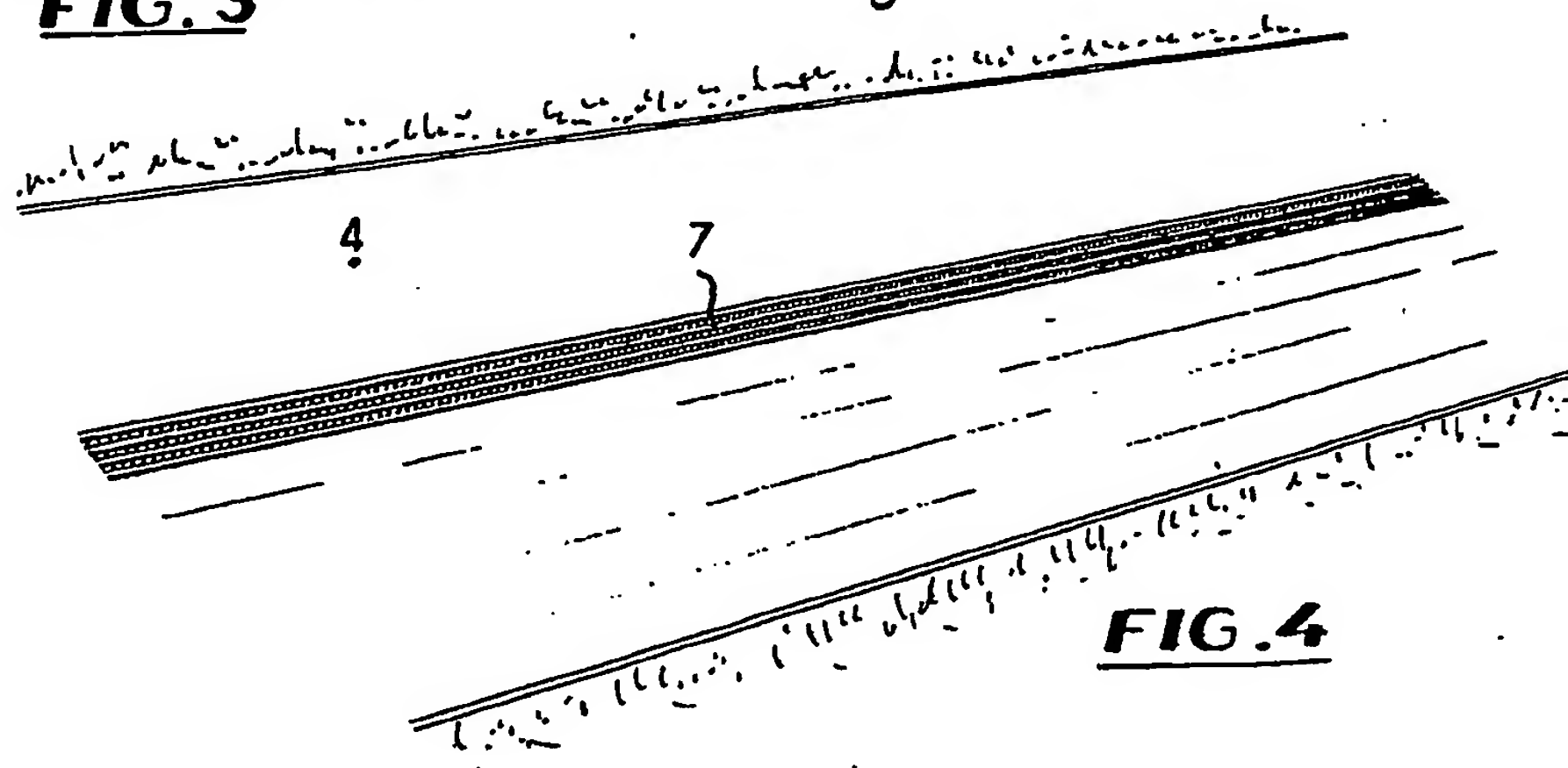
**FIG. 1**



**FIG. 2**



**FIG. 3**



**FIG. 4**

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